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ABSTRACT

Dialogue from 30-minute samples from "Sesame Street" and "Mr. Rogers' Neighborhood" was coded for grammar, content, and discourse. Grammatical analysis used the LINGQUEST computer-assisted language assessment program (Mordecai, Palen, and Palmer 1982). Content coding was based on categories developed by Rice (1984) and consisted of counts of immediacy, emphasis, nonliteral meanings, novel words, and explicit instructions regarding the interpretation of content. Discourse categories were four types of narratives proposed by Health and Branscombe: recounts, accounts, event casts, and stories. Findings indicated that the programs' dialogue was appropriate to young viewers, showing adjustments like those made by adults speaking to young children. Mean length of utterance was comparable to that of adults in interactions with children, the ratio of different words to total words equaled that of young children's language, sentence structure was simplified, and there was a pronounced emphasis on the here and now, as evidenced by a majority of present tense verbs, a high proportion of utterances about immediately visible topics or referents, and a preponderance of event casts as narrative structure. Repeated instances of linguistic emphasis were found, with frequent repetition of key terms. Both programs avoided complex word forms. Overall, the dialogue of educational children's programs follows the constraints and adjustments found in adults' child-directed language. (Author/RH)

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The "Motherese" of Mr. Rogers: A Description of the Dialogue of Educational Television Programs

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Abstract

Dialogue from 30-minute samples each from Sesame Street and Mr. Rogers' Neighborhood was described. Three aspects of language were measured: grammar, content, and discourse. The findings indicate that the dialogue of these programs is well suited to young viewers, with adjustments similar to those evident in adults' speech to young children. The mean length of utterance is comparable to that of adults in interactions with children, the ratio of different words to total words is the same as that of young children's language, sentence structure is simplified, and there is a heavy emphasis on the here and now (a majority of present tense verbs, a high proportion of utterances about immediately visible topics or referents, and a preponderance of event casts as narrative structure). There are repeated instances of linguistic emphasis, with frequent repetition of key terms. Both programs avoid complex word forms. Overall, the dialogue of educational children's programs follows the constraints and adjustments evident in adults' child-directed language.

Introduction

Dyadic interactions between adults and children have been widely recognized as a source of linguistic input that is well suited to children's language acquisition. Adults tend to simplify their talk to children in a manner that has come to be known as "motherese." Among the features of motherese are an emphasis on the here and now, with a restricted vocabulary and much paraphrasing; simple, well-formed sentences; frequent repetitions; and a slow rate of speech with long pauses between utterances and after content words (cf. Owens, 1984, p. 224). An extensive literature has explored the implications of the motherese register and how it may contribute to children's language acquisition (e.g., Hoff-Ginsburg & Shatz, 1982). The current conclusion is that the simplified register is probably facilitative, although not necessary, for language acquisition (Snow, 1984).

Live interactions with adults are not the sole source of linguistic input for young children in Western technologically advanced societies. Youngsters receive large amounts of exposure to the mass communication media. Children in the United States spend more time watching television than they do in school, in social interaction with other family members, or in any other waking activity (Singer, 1983). Children begin viewing during the

language acquisition period of development. Infants respond to the sights and sounds of TV (Hollenbeck & Slaby, 1979). Children between 1 and 2 years of age begin to react to particular characters and events on TV by pointing, labeling, and selective attention (Lemish, in press). By age 3 years, American children are regular viewers, averaging more than 2 1/2 hours of viewing daily (Huston, Wright, Kerkman, Seigle, Rice, & Bremer, 1983). Furthermore, young children's viewing is attentive. In the home situation, when the TV is on, children increase the percentage of time looking at the screen from 6% at age 1, to 40% at age 2, 67% at age 3-4, and 70% for 5- to 6-year-olds (Anderson, 1983). While they view, they hear an extensive amount of dialogue. Insofar as children view frequently and attentively, the medium is potentially a major source of verbal information for children at the ages of rapid language acquisition.

The dialogue of television has been dismissed as inappropriate for young children, because it is alleged that "on television, people rarely talk about things immediately accessible to view for the audience . . . they (children) hear rapid speech that cannot easily be linked to familiar situations" (Clark & Clark 1977, p. 330). That characterization was not completely supported in a descriptive study of the dialogue of television programs

(Rice, 1984). In particular, the educational programs sampled (Mr. Rogers' Neighborhood and Electric Company) emphasized and simplified dialogue in a manner much like motherese: slow rate, low rate of dysfluencies, grammatical completeness, immediacy of reference, frequent rephrasings and emphasis of key words, and avoidance of nonliteral word meanings.

The earlier study (Rice, 1984) is limited by a small sample size. Short bits (6 1/2 minutes) were selected from six different programs, representing educational programs, cartoons, and adult situation comedies. The programs' nonlinguistic production features as well as linguistic features were described. Given the findings suggesting that educational programs for young children simplify dialogue to correspond to young viewers' language competencies, it is of interest to determine if that finding can be replicated with a more extensive sample of educational programming.

It is the purpose of this study to describe the dialogue of samples of the two most popular educational programs for preschool children, Mr. Rogers' Neighborhood and Sesame Street, hereafter referred to as MR and SS. These two programs are broadcast nationally on public television. MR is aimed at children ages 2 to 4, and SS is aimed at children 3 to 6. MR emphasizes affective

content, whereas SS focuses more heavily on cognitive skills. They are widely viewed. For example, for one viewing week in 1983, an estimated 10.4 million American households tuned in to SS, and an estimated 5.5 million households viewed MR (Palmer, 1984, p. 117). SS is the most popular program of preschoolers, with 3-year-old children averaging 3 hours per week of SS viewing (Huston, Wright, Eakins, Kerkman, Pinon, Rosenkoetter, & Truglio, 1985).

Procedures

Stimulus selection. Four hours of broadcast programming for MR and SS were dubbed off the air in June 1984. From this 4-hour sample for each program, a 30-minute stimulus videotape was edited for each program. The bits were selected to meet the following criteria: they did not contain singing and extended rhyming, and they were judged by two adult viewers as representative of the overall content of the 4-hour sample. The SS sample consisted of 10 individual bits with an average bit length of 2.9 minutes. The MR sample included 8 bits with an average bit length of 3.9 minutes. Bits were defined as within topic discussions by the same characters, on the same set. Bit boundaries were established by consensus of agreement between the two experimenters.

Transcription. The two stimulus videotapes were transcribed verbatim by one of the experimenters. A second transcriber, a graduate student, checked the transcripts for accuracy. Agreement was high for both samples, at the 99% level.

Coding. The transcripts were coded for three aspects of verbal communication: grammar, content, and discourse. The grammatical analysis was completed using the LINGQUEST computer-assisted language assessment program (Mordecai, Palen, & Palmer 1982). Following the LINGQUEST protocol, the following were deleted from analysis: incomplete sentences, repetitions, and vocatives. In addition, syntactically unstructured elements were deleted, following the conventions of Barnes, Gutfreund, Satterly and Wells, 1983. They include greetings (hi, bye), politeness phrases (thank you), conversational fillers (yes, good, elipitical diectic terms such as there), sentence starters (now, and so) and exclamations (hah, oh no). The LINGQUEST program requires preliminary coding of nouns, certain verbs, gerunds, participles, and particles. The two experimenters coded each transcript individually, then resolved differences by consensus.

The content coding was based on the categories developed for the Rice (1984) study. It consists of counts of the following categories: immediacy, emphasis,

nonliteral meanings, novel words, and explicit instructions regarding how the viewing audience is supposed to interpret content. Immediacy involved coding comments according to the presence or absence of referents (referent immediately present on screen, removed from sight, or nonreferential comments). Emphasis was defined as a means of giving selected prominence to a linguistic constituent for some sort of communicative purpose. It could be accomplished by one or more of the following linguistic devices: syntactic/pragmatic operations, such as "It is _____"; "This is a _____"; stress; repetition; recasting in different linguistic contexts, involving a partial or complete repetition of a particular linguistic form in a new communicative and/or linguistic context. An example of recasting is:

Mr. Rogers: Just very fine dust.
It's wood dust, isn't it?
Bob: Wood dust is right.
Mr. Rogers: Dust that comes from the wood.
Bob: Sometimes you get big curls of wood.

Nonliteral meanings included metaphors and puns. Novel words are those made up for the occasion, such as a doctor who makes cave calls.

Coding of the content categories was done by the two experimenters individually. Reliability was calculated by

dividing the number of agreements by the total number of agreements and disagreements. Reliability for coding emphasis was 80% and for immediacy it was 83%. Reliability was not calculated for nonliteral meanings, explicit instructions, or novel words because of very low frequencies within these categories. Differences were almost always due to oversight, and were resolved by consensus between the two coders.

The discourse categories were four types of narratives proposed by Heath and Branscombe (in press): recounts, accounts, event casts, and stories. Recounts are retellings in which information is known to both the teller and the listener. Accounts are narratives generated by either the teller or another party to provide new information or new interpretations of information which may already be known to both the teller and the listener. An event cast is a running narrative on events currently in the attention of the teller and listeners. This narrative may be simultaneous with the events or precede them. Stories include an animate being who moves through a series of events with goal-directed behavior. Each bit was categorized according to the dominant narrative type. The two experimenters coded the bits independently. Agreement was 100%.

Results and Discussion

Grammar. The LINGQUEST analysis generated the following variables for each bit: mean length of utterance in words (MLU), type/token ratio, total number of words, total number of utterances, percentage of present, past, and future tense verbs, four different categories of sentence types, and three different categories of questions. The results are presented in Table 1 where they are reported as bit means.

Insert Table 1 about here

The average MLU for an SS bit was 6.91 and for an MR bit was 7.42. The observed MLU for MR is comparable to the earlier sample, where the MLU in words was 7.21 (Rice, 1984). The range was relatively restricted, from 5.89 to 8.00 for SS and 6.23 to 8.42 for MR. The restricted range is related in part to the elimination of unstructured utterances, such as exclamations and politeness phrases. The short utterances that did occur were of the unstructured type, although it was possible for short structured utterances to have occurred.

The MLU of the television characters compares favorably to observed MLUs of adults talking to children. Kindergarten teachers' utterances directed toward their

students ranged from an MLU in words of 7.52 to 8.80, in contrast to the same teachers' utterance length in conversations with their adult colleagues of 11.78 to 18.48 (Granowsky & Krossner, 1970). Bohannon and Marquis (1977) report an MLU in morphemes of 6.43 for unfamiliar adults talking to a 3-year-old, compared to an MLU of 6.95 for the 3-year-old's mother. They report an MLU of 13.8 for adults talking to adults. Newport, Gleitman and Gleitman (1977) obtained mean MLUs in words of 4.24 for mothers talking to their 12-to-27-month-old children, vs. mean MLUs of 11.94 for mothers' speech to the adult experimenter.

The ratio of different words to total words used (Type/Token Ratio) was .45 for both programs. Comparative data is available in Templin (1957), who reports a ratio of .45 for children ages 3-4 years, and a range from .44 to .47 for yearly increments up to age 8 years.

The analysis of verb tenses indicates that the majority of verbs are in the present tense, 77% for SS and 68% for MR. Past and future tenses are less frequent and roughly equal in probability. The majority of utterances are phrases or simple sentences of the NP + VP (+ NP) or NP + cop + NP structure. For SS, 10% of the utterances were phrases and 23% were simple sentences; for MR, 15% phrases and 18% simple sentences. An additional 10% of

utterances for SS and for MR fell into one of the following types: NP + aux + VP, or NP (+ aux) + cat (+ VP), or NP + modal (+ aux) + VP (+ NP). Sentences with infinitives were infrequent, as were compound sentences. The percentage of utterances unidentifiable by LINGQUEST (generally more complex structures, such as embeddings, complex questions, and complex structure combinations), was 27% for SS and 23% for MR.

Questions were analyzed according to three categories: reversals, such as "Are you coming?"; rising intonation questions, such as "You want it?"; and questions formulated with Wh words, such as "What is that?" A total of 80 questions appeared in the SS sample, and 67 in MR. For SS, 27% were reversals, 22% were rising intonations, and 51% were Wh questions. For MR, 69% were reversals, 21% were rising intonations, and 10% were Wh questions. Reversals are closely related to the yes/no questions that Newport et. al. (1977) found to be positively associated with children's auxilary acquisition. Also, Hoff-Ginsberg (1981) reported that the frequency of some Wh questions in mothers' speech predicted auxilary growth in their children's speech.

Content. Results of the content coding are reported in Table 2, as bit means per show. For the category of

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Insert Table 2 about here

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immediacy, the majority of utterances for both SS and MR were about referents immediately present on the screen, with 58% for SS and 63% for MR. This suggests a strong focus on the here and now in the programming, especially when combined with the earlier finding of a large proportion of present tense verbs.

There were frequent instances of linguistic emphasis in both programs. The proportion was .94 for SS and .77 for MR. This can be interpreted as almost one instance of emphasis per utterance for SS, on the average. The measure also indicates the considerable redundancy of linguistic forms and associated content that is evident in the programs. Key terms appear repeatedly throughout a bit, often recast in different linguistic frames. For example, in a 4-minute segment of MR, with a total of 45 utterances, there were 29 occurrences of the word ball (or balls).

Another assist to the viewer is the frequent use of proper names as direct addresses between two interlocutors. Given the fact that the characters on the programs are very familiar with each other, it certainly is not necessary for them to use each other's names in

casual conversation. Yet almost always the initial appearance of a character is accompanied by one or several insertions of the character's name in the opening conversational interactions. On the other hand, both programs pointedly avoid adult-like complex word forms. Nonliteral meanings such as sarcasm, puns, or slang words and novel words are rare occurrences.

Explicit acknowledgement of the home viewer is evident in the 3% of SS utterances that were direct instructions, and the 17% offered by MR. Examples are: "Now tell me when it goes off." "Now tell me which one I'm going to put on now." And "Now, which one is this one?" The instructions are followed by pauses long enough for a response, and usually, but not always, the answer is then provided. This technique has been referred to as "the phantom reinforcer" (Palmer, 1978). This study's estimate for frequency of use in SS probably underrepresents the actual frequency, insofar as many of the recurrent formats of SS that provide a pause for audience participation appear in song, which were omitted from this sample. An example is the well known categorization song that begins "one of these things is not like the other. . ." and leaves a blank in the song for the child to fill with the name of the odd object.

Observations of young children viewing in their homes indicate that often they do respond (Lemish, in press).

Discourse. The emphasis on the here and now is evident at the level of narrative type. Of the 10 SS bits, 9 were event casts, involving a running narrative or conversational interchange about events currently in the attention of the teller and the observers. In one of these bits, a remembered past event was presented as an event cast by means of a flashback to an earlier time. The viewer saw the remembered events and interactions, with a voice-over narration. This strong reliance on event casts is possible because of television's ability to transcend temporal constraints. The other SS bit was an account, although a rather odd one. It was a parody of a commercial, with a speaker "advertising" rain by extolling the virtues of rain, accompanied by characters walking into the announcer's office setting wearing various rain attire.

All the MR bits were event casts. One started with a brief recount of the previous day's events, and two had embedded short accounts.

Comparison of Sesame Street and Mr. Rogers' Neighborhood. A series of *t* tests were conducted on the grammar and content variables to investigate possible differences between the two programs. Differences were

apparent for the following variables: Reversal questions, $t(16) = 4.183$, $p < .001$; Wh questions, $t(16) = 5.916$, $p < .001$; direct instructions to the viewer, $t(16) = 2.257$, $p < .05$. There is a higher proportion of reversal questions, fewer Wh questions, and a higher proportion of direct instructions to the viewer on MR as compared to SS. Overall, the extent of the similarity of dialogue characteristics of the two programs is striking, given the differences in production techniques and the different content emphases.

Conclusions

One of children's favorite activities is viewing television. Among the most popular programs for young children in the United States are the educational programs broadcast on public television, Sesame Street and Mr. Rogers' Neighborhood. As children view, they experience dialogue as well as visual information. Contrary to earlier assumptions, the dialogue of these programs is well suited to the young viewer, with adjustments similar to those evident in adults' speech to young children. The mean length of utterance is reduced, the ratio of different words to total words is comparable to that of young children, sentence structure is simplified, and there is a heavy emphasis on the here and now (a majority of present tense verbs, a high proportion of utterances about

immediately visible topics or referents, and a preponderance of event casts as narrative structure). The questions used are of the two types previously reported to be associated with children's acquisition of auxilaries, those of reversals (yes/no questions) and Wh questions.

Furthermore, there are indications of explicit attempts to insure children's comprehension of linguistic forms. There are frequent instances of linguistic emphasis, where targeted linguistic forms are stressed, repeated in new linguistic frames, or otherwise emphasized in the dialogue. Key terms appear repeatedly. The proper names of characters are used consistently near the beginning of conversational interactions. In addition, both programs avoid complex word forms, such as ones with nonliteral meanings or novel forms.

While the medium does not allow for interaction between viewer and television character, there are, nevertheless, attempts to elicit responses from the viewers. These appear as explicit directions to the viewer, a device used in dialogue more by MR than SS, although SS often uses songs to do this.

Overall, the dialogue of children's educational television programs provides a model of language form, structure and use that is well suited to the young viewer's linguistic competencies. Observations of

children's responses and comments in the home viewing situation indicate that they readily assume that the dialogue is meaningful, and that they comprehend what they hear (Lemish & Rice, 1984).

Children's ability to extract from the dialogue linguistic information that they apply to their own mastery of language remains to be seen. To some extent, the same arguments that have been proposed for the facilitative effects of motherese can be applied to television viewing. On the other hand, there are some significant differences between live interactions and the viewing circumstances. The major one is that in live conversations adults can respond to what a child says, by repeating, expanding, or extending a child utterance. This feature of semantic contingency has been linked with children's language acquisition (e.g., Snow, 1984; Wells, 1985). Facilitative effects are attributed to adults' provision of linguistic models for what the child is trying to express, the content of immediate interest to the child. Wells (1985) points out that adult-child interactions are embedded in a conversational setting in which the two parties are trying to communicate with each other. Adults generally do not intend to model linguistic forms to children. Expansions are often attempts to interpret what the child means to say and to

arrive at a mutual understanding of a common topic. Nor does the child model his speech on what he hears in any sort of straightforward way. The critical features of live interactions are joint attention to the same topic, mutual comprehension of content, and encouragement for conversation. According to Wells, the provision of child-appropriate language, the linguistic adjustments of adults, are secondary consequences of the communicative context. The dialogue of children's television programs also focuses on successful communication with the child viewer. While the TV characters do not follow up on topics initiated by the child viewer, the content is evidently of interest to children, insofar as it maintains their attention. Furthermore, the program content is comprehensible. In short, educational programs create an attentive situation to which they then respond in a presentation comprehensible to young viewers.[1]

Given the noninteractive nature of viewing, language learning will depend upon how much children can draw upon observational learning, a possibility relatively overlooked in the child language literature (cf. Heath's

[1]I would like to thank Catherine Snow for this succinct characterization.

description of observational circumstances for language acquisition, 1983). Attention and comprehension-based analyses are surely critical moderators of observational learning. Child viewers must draw upon strategies for coping with new linguistic information that are consistent with the processing demands of the medium. One candidate is a wholistic strategy for language learning (cf. Peters, 1983), as is apparent in the tendency of children to repeat phrases and jingles of commercials. Another possibility is that young viewers call upon a fast mapping of new linguistic forms, an initial quick but superficial grasp of linguistic meanings (cf. Carey, 1978). These possibilities are amenable to investigation. The extent to which young children benefit from the "motherese" of Mr. Rogers and the occupants of Sesame Street is a matter worth further study.

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Table 1.

Grammatical Features Means per Bit for Sesame Street and Mr. Rogers' Neighborhood

	MLU	TTR	Total Words	Total Utterances	Verbs[1] Pres.	Past	Future
Sesame Street	6.91	.45	280	43.6	77%	12%	11%
Range	5.89-	.38-	144-	19-	47-	0-	0-
(N of bits = 10)	8.00	.59	449	69	92	45	19
Mr. Rogers	7.42	.45	367	55.5	68%	15%	17%
Range	6.23-	.34-	127-	16-	62-	0-	9-
N of bits = 8)	8.42	.56	766	128	86	29	33

[1]Calculated as total number of instances per category divided by the total number of utterances for the grand mean, divided by the number of bits for the bit mean.

Table 2.

Content Category Means per Bit for Sesame Street and Mr. Rogers' Neighborhood

	Immediacy[1]			Emphasis[2]	Nonliteral Meanings
	Immediate	Removed	Other		
Sesame Street	58%	33%	9%	.94	1%
Range	21-	9-	3-	.60-	0-
	88	68	16	1.16	7
Mr. Rogers	63%	26%	10%	.77	0%
Range	11-	10-	0-	.57-	0-
	88	70	29	1.22	0

	Novel Words	Direct Instructions	Direct Addresses (Proper Names)
Sesame Street	1%	3%	22%
Range	0-	0-	0-
	4	13	43
Mr. Rogers	1%	17%	14%
Range	0-	2-	0-
	2	51	36

[1]Calculated as total number of instances per category divided by total number of utterances for the grand means, divided by number of bits for the bit mean.

[2]Emphasis is calculated as the total number of occurrences of emphasis divided by the total number of utterances. Because it was possible to have more than one instance of emphasis per utterance, the proportions can exceed 1.00.